

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 01 March 2001 (01.03.01)	
International application No. PCT/FI00/00585	Applicant's or agent's file reference 13501A
International filing date (day/month/year) 28 June 2000 (28.06.00)	Priority date (day/month/year) 21 July 1999 (21.07.99)
Applicant AUER, Markku et al	

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

29 January 2001 (29.01.01)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer F. Baechler Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 13501A	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI00/00585	International filing date (day/month/year) 28.06.2000	Priority date (day/month/year) 21.07.1999
International Patent Classification (IPC) or national classification and IPC: C07D 311/72, C07D 307/79, C07D 335/16, C08F 2/44, C08K 5/1545, C08K 5/45, C08F 210/00 // (C08F 210/00. 224:00), (C08F 210/00. 228:06)		
Applicant Valtion Teknillinen Tutkimuskeskus et al		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>10</u> sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input checked="" type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 29.01.2001	Date of completion of this report 29.10.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer GERD STRANDELL/BS Telephone No. 08-782 25 00

Form PCT/IPEA/409 (cover sheet) (January 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI00/00585

1. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages 1-23, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the claims:
pages _____, as originally filed
pages _____, as amended (together with any statement) under article 19
pages _____, filed with the demand
pages 25-33, filed with the letter of 15.08.2001
- ☒ the drawings:
pages 1, 3, 4, as originally filed
pages _____, filed with the demand
pages 2, filed with the letter of 01.03.2001
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>3-32</u>	YES
	Claims	<u>1, 2</u>	NO
Inventive step (IS)	Claims	<u>24-32</u>	YES
	Claims	<u>1-23</u>	NO
Industrial applicability (IA)	Claims	<u>1-32</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The new amended claims 1-32 replace the original claims 1-32. The new claim 1 has been restricted, based on original claim 5, to relate to compounds where $m+n+o$ is an integer 1-6 and having the formula Ia. The new claim 15 has been restricted correspondingly. The obvious writing error "homogenous" in original claim 9 has been amended to "hydrogens". Confer the original claim 1. The translation error in the preamble of claim 16 has been amended according to claim 1. The other claims correspond to the original claims.

The following documents are cited:

- D1) J. Chem. Soc. (C), Volume 6, 1966, J.Green et al,
"Bond Stabilisation in Tocopherols. Part 1. The Claisen
Rearrangement of Alkyl Tocopheryl Ethers", page 1422 -
page 1427
- D2) J. Chem. Soc. (C), Volume 6, 1966, D. McHale et al,
"Bond Stabilisation in Tocopherols. Part II.1 Claisen
Rearrangement of But-2-enyl Tocopheryl Ethers", page 1427
- page 1431
- D3) GB 2224028 A (MERCK & CO INC), 25 April 1990 (25.04.90)
- D4) EP 0392389 A2 (F. HOFFMAN-LA ROCHE AG), 17 October 1990
(17.10.90)
- D5) STN International, File CA, Chemical abstracts,
volume 119, no. 13, 27 September 1993 (Columbus
Ohio, US), Fujirebio, Inc.: "Preparation of
benzofuran derivatives", abstract no. 139070,
& JP,A2,04300878, 19921023

.../...

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

- D6) STN International, File CA, Chemical abstracts, volume 120, no 15, 11 April 1994, (Columbus Ohio US), Novak, Lajos et al: "One-pot route to vinyl 2,3-dihydrobenzofurans", abstract no. 191445, & Heterocycles (1994), 38(1), 177-9
- D7) STN International, File CA, Chemical Abstracts, volume 113, no. 7, 13 August 1990 (Columbus Ohio, US), Eisai Co., Ltd.: "Preparation of chroman derivatives", abstract no. 58940 & JP,A2,02011585, 19900116
- D8) Bull. Chem. Soc. Jpn., Volume 68, No 9, 1995, Makoto Matsui et al, " Aluminium Chloride-Tetraalkylammonium Halide Complex as a Novel Catalyst in Friedel-Crafts Alkylation. Direct Construction of the Chroman Structure from 1,3-Diene", page 2663 - page 2668, page 2664
- D9) J. Med. Chem., Volume 34, No 1, 1991, David E. Nichols et al, "2,3-Dihydrobenzofuran Analogues of Hallucinogenic Phenethylamines", page 276 - page 281, page 277
- D10) CHEMISTRY LETTERS, Volume 9. 1985, Yoshiji Fujita et al, "Friedel-Crafts Reaction of 3,6-Dihydro-4-Methyl-2H-Pyran With Phenols. A Convenient Synthesis of A Key Intermediate of Alpha-Tocopherol", page 1399 - page 1400
- D11) STN International, File CA, Chemical abstracts, volume 128, (Columbus Ohio, US), Yamamoto, Yoshihiro et al: "New vitamin E compound discovered in fish eggs (2)", abstract no. 256564, & Bitamin E Kenkyu no Shinpo (1998), 8, 31-34
- D12) STN International, File CA, Chemical abstracts, volume 119, no. 12, 20 September 1993 (Columbus Ohio, US), Fujirebio, Inc.: "Preparation of propenylhydroquinone and propenylbenzoquinone derivatives", abstract no. 116957, & JP,A2,04356435, 19921210, RN 137443-67-5 and others
- D13) WO 9310175 A1 (F.HOFFMANN-LA ROCHE AG), 27 May 1993 (27.05.93), page 1, line 1 - page 2, line 24, the claims

.../...

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

D14) EP 0878502 A2 (CIBA SPECIALTY CHEMICALS HOLDING INC.), 18 November 1998 (18.11.98), page 2, line 7 - line 14, the claims

D15) DE 19747600 A1 (PACIFIC CORP.), 14 January 1999 (14.01.99)

D16) WO 9527744 A1 (BOREALIS HOLDING A/S), 19 October 1995 (19.10.95)

D17) EP 0695733 A1 (DSM N.V.), 7 February 1996 (07.02.1996)

D18) WO 9749738 A1 (THE DOW CHEMICAL COMPANY), 31 December 1997 (31.12.1997)

Documents D3) (see inter alia page 6-page 8, page 12, line 1-line 15 and the claims), D5) (see inter alia RN 137443-67-5 and others), D9), D12) and D13) disclose compounds according to present claims 1 and 2 and compounds structurally close to the compounds according to present claims 3-14, as well as methods of producing them. Thus, at least claims 1 and 2 are not novel.

Documents D1), D2), D4) D6)-D8), D10) and D11) disclose compounds structurally close to the compounds according to present claims 1-14 as well as methods of producing them.

Furthermore, D13) discloses the use of a tocopherol or other 6-chromanol compound, such as 2,2,5,7,8-pentamethylchroman-6-ol, together with a phosphorus-containing antioxidant in a stabilising mixture for plastic materials containing polypropylene. Thus, the claimed invention differs by not containing a phosphorus-containing antioxidant. The physical stabilising mixture is added in the plastic material by conventional methods, which are generally utilised, for plastic materials by additives, at any convenient stage of the manufacture or processing of the plastic material. For example the mixture is added immediately after polymerisation stage just before the drying stage. (See page 4, line 16-line 26). However, at least with the present wording, claims 16-23 seem to be obvious to a person skilled in the art in view of D13).

.../...

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

Thus, none of the cited documents D1)-D13) has explicitly disclosed the invention claimed in claims 3-32. Thus, claims 3-32 are novel. However, given the facts above the claims 3-23 are considered to be obvious to a person skilled in the art. It has not been shown, for the whole scope of the claims, that the compounds used have any unexpected beneficial effects compared to the known compounds in the cited documents. Thus, claims 1-23 lack inventive step. According to the applicant the claimed copolymerisation method (claims 24-32) has the advantage that it allows the use of a metallocene catalyst and that the stabilisation is performed during polymerisation, which means that the stabilising comonomer is uniformly distributed in the entire polymer. The achieved result is not obvious to a person skilled in the art.

Documents D14) -D18) only disclose the general state of the art, and are not considered to be of particular relevance.

Consequently, the invention claimed in claims 3-32 is novel, but the invention claimed in claims 1 and 2 is not novel. The invention claimed in claims 24-32 is considered to fulfil the requirements of inventive step and industrial applicability. The invention claimed in claims 1-23 is not considered to fulfil the requirement of inventive step but is considered to fulfil the requirement of industrial applicability.

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 32 is not clear and concise because of the wording "is exactly defined". Confer PCT, Article 6 ("Claims shall be clear and concise. They shall be fully supported by the description".).

RECORD COPY

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PCT REQUEST

13501A

Original (for SUBMISSION) - printed on 28.06.2000 09:25:49 AM

0 0-1	For receiving Office use only International Application No.	PCT/FI 00 / 00585
0-2	International Filing Date	28 JUN 2000 (28-06-2000)
0-3	Name of receiving Office and "PCT International Application"	The Finnish Patent Office PCT International Application
0-4 0-4-1	Form - PCT/RO/101 PCT Request Prepared using	PCT-EASY Version 2.90 (updated 10.05.2000)
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	National Board of Patents and Registration (Finland) (RO/FI)
0-7	Applicant's or agent's file reference	13501A
I	Title of invention	A COMONOMER, AND A POLYMER STABILIZED WITH IT DURING POLYMERIZATION
II II-1 II-2 II-4 II-5	Applicant This person is: Applicant for Name Address:	applicant only all designated States except US VALTION TEKNIILLINEN TUTKIMUSKESKUS Vuorimiehentie 5 FIN-02150 Espoo Finland
II-6	State of nationality	FI
II-7	State of residence	FI
III-1 III-1-1 III-1-2 III-1-4 III-1-5	Applicant and/or inventor This person is: Applicant for Name (LAST, First) Address:	applicant and inventor US only AUER, Markku VTT Kemiantekniikka Biologinkuja 7 FIN-02150 Espoo Finland
III-1-6	State of nationality	FI
III-1-7	State of residence	FI

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III-2	Applicant and/or inventor	
III-2-1	This person is:	applicant and inventor
III-2-2	Applicant for	US only
III-2-4	Name (LAST, First)	WILÉN, Carl-Erik
III-2-5	Address:	Åbo Akademi, Teknisk Polymerkemi Biskopsgatan FIN-20500 Åbo Finland
III-2-6	State of nationality	FI
III-2-7	State of residence	FI
III-3	Applicant and/or inventor	
III-3-1	This person is:	applicant and inventor
III-3-2	Applicant for	US only
III-3-4	Name (LAST, First)	STRANDÉN, Juha
III-3-5	Address:	Åbo Akademi, Teknisk Polymerkemi Biskopsgatan FIN-20500 Åbo Finland
III-3-6	State of nationality	FI
III-3-7	State of residence	FI
III-4	Applicant and/or inventor	
III-4-1	This person is:	applicant and inventor
III-4-2	Applicant for	US only
III-4-4	Name (LAST, First)	ROSLING, Ari
III-4-5	Address:	Åbo Akademi, Teknisk Polymerkemi Biskopsgatan FIN-20500 Åbo Finland
III-4-6	State of nationality	FI
III-4-7	State of residence	FI
III-5	Applicant and/or inventor	
III-5-1	This person is:	applicant and inventor
III-5-2	Applicant for	US only
III-5-4	Name (LAST, First)	NÄSMAN, Jan
III-5-5	Address:	Dragonvägen 58 b A 6 FIN-20700 Åbo Finland
III-5-6	State of nationality	FI
III-5-7	State of residence	FI
III-6	Applicant and/or inventor	
III-6-1	This person is:	applicant and inventor
III-6-2	Applicant for	US only
III-6-4	Name (LAST, First)	LUTTIKHEDDE, Hendrik
III-6-5	Address:	Sirkkalankatu 27 A 28 FIN-20700 Turku Finland
III-6-6	State of nationality	NL
III-6-7	State of residence	FI

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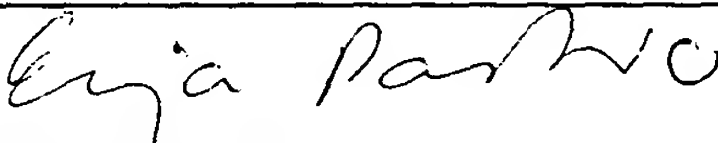
Original (for SUBMISSION) - printed on 28.06.2000 09:25:49 AM

IV-1	Agent or common representative; r addr ss for corresp ndenc The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name	PAPULA OY
IV-1-2	Address:	P.O. Box 981 (Fredrikinkatu 61 A) FIN-00101 HELSINKI Finland
IV-1-3	Telephone No.	+358 9 3480 060
IV-1-4	Facsimile No.	+358 9 3480 0630
IV-1-5	e-mail	papula@papula.fi
V	Designation of States	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AP: GH GM KE LS MW MZ SD SL SZ TZ UG ZW and any other State which is a Contracting State of the Harare Protocol and of the PCT EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT EP: AT BE CH&LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT OA: BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH&LI CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

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V-5	Precautionary Designation Statement In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.	
V-6	Exclusion(s) from precautionary designations	NONE
VI-1	Priority claim of earlier national application	
VI-1-1	Filing date	21 July 1999 (21.07.1999)
VI-1-2	Number	991634
VI-1-3	Country	FI
VII-1	International Searching Authority Chosen	Swedish Patent Office (ISA/SE)
VIII	Check list	number of sheets electronic file(s) attached
VIII-1	Request	5 -
VIII-2	Description	23 -
VIII-3	Claims	8 -
VIII-4	Abstract	1 13501a.txt
VIII-5	Drawings	4 -
VIII-7	TOTAL	41
	Accompanying items	paper document(s) attached electronic file(s) attached
VIII-8	Fee calculation sheet	✓ -
VIII-9	Separate signed power of attorney	✓ -
VIII-12	Priority document(s)	Item(s) VI-1 -
VIII-16	PCT-EASY diskette	- diskette
VIII-17	Other (specified):	Official Action / FI - 991634
VIII-18	Figure of the drawings which should accompany the abstract	
VIII-19	Language of filing of the international application	Finnish
IX-1	Signature of applicant or agent	
IX-1-1	Name	PAPULA OY
IX-1-2	Name of signatory	Erja Partio

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10-1	Date of actual receipt of the purported international application	28 JUN 2000 (28-06-2000)
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Original (for SUBMISSION) - printed on 28.06.2000 09:25:49 AM

10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/SE
10-6	Transmittal of search copy delayed until search fee is paid	

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	25 JULY 2000	(25.07.00)
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